

**Source:** Ad hoc 4 vice chair<sup>1</sup>

**Title:** Report from physical Ad Hoc 4 meeting

**Document for:** Approval

## 1. Executive Summary

The physical Ad Hoc 4 meeting took place on December, 3<sup>rd</sup> from 13.15h-17.25h. Many different topics including compressed mode related items had to be considered. During the meeting a new repetition scheme

For TFCI in compressed mode could be accepted. Further, a slightly changed TFCI mapping rule is recommended for approval. Regarding the creation of compressed mode after long discussion it was not possible to agree on a proposal to apply puncturing for the creation of the gap (Method A). Concerning AMR, for FDD ad hoc 4 could not recognise evidence for introducing additional TrCH with different coding rates. Due to lack of time it was not possible to treat all papers regarding multiplexing items within the meeting.

The following papers have been scheduled for ad hoc 4:

<b>Tdoc #</b>	<b>Source</b>	<b>Title</b>	<b>Status after the meeting</b>
99j94	LGIC	TFCI repetition for compressed mode in uplink	Accepted for approval in the plenary, joint CR (related to j94 and j30) will be drafted
99j30	Siemens	TFCI mapping in Compressed Mode for Uplink and Downlink	Accepted for approval in the plenary, joint CR (related to j94 and j30) will be drafted
99j52	LGIC	Codeword Mapping Rule of TFCI Coding Scheme for FDD	Accepted for approval in the plenary, CR will be drafted
99i50	Ericsson	CR 25.212-005: Compressed mode by higher layer scheduling	Accepted for approval in the plenary
99i48	Ericsson	CR 25.211-007: Compressed mode by higher layer scheduling	Accepted for approval in the plenary
99j03	Nokia	Means for compressed mode by puncturing in downlink	No agreement could be achieved
99j04	Nokia	Rate matching and multiplexing for compressed mode with puncturing (Method A)	No agreement could be achieved
99j08	Siemens	End puncturing for short convolutional codes	No agreement could be achieved
99k11	DoCoMo	Modification of BTFD description in 25.212 Annex	Accepted for approval in the plenary
No #	Nortel	Simulation results for FDD for two channel coding schemes for two AMR modes	For FDD there is no evidence for additional TrCH related to certain AMR classes
99i22	WG2	Reply to liaison on Physical Layer Service Implementation Capabilities	Reply LS will be drafted

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99j46	Nortel	Characterisation test plan and Error patterns for UTRA FDD	Accepted, drafting group will write LS, to support S4 for test case creation
99k20	Panasonic	Proposed Liaison statement on Error Correction Coding for FACH	No conclusion, topic needs further consideration in the plenary
99k08	Mitsubishi	Rate matching parameter determination for coding scheme = no coding	Not treated
99k09	Mitsubishi	Rate matching parameter determination in DL and fixed positions	Not treated
99j89	Ericsson	Connection between TTI and CFN	Not treated
99j90	Ericsson	Zero length TB	Not treated
99i59	Ericsson	Minimum SF in UL	Not treated
99i53	Ericsson	Removal of SFN	Not treated
99k22	DoCoMo	Report on service mapping	Not treated

Table 1: Documents scheduled for the Ad Hoc 4 meeting

During the meeting, the following outgoing liaison statements have been identified:

To	Title	Editor
WG2	Answer to liaison on Physical Layer Service Implementation Capabilities	Siemens
S4	Requirements from WG1 regarding AMR test issues	Nortel, DoCoMo, Nokia, Ericsson

Table 2: Outgoing LS to other working groups

Furthermore, the following CRs are recommended for approval by the plenary:

Specification	Topic	Editor
25.212	TFCI mapping in compressed mode (based on j94 and j30)	LGIC Siemens, ETRI, Ericsson
25.212	TFCI coding (based on j52)	LGIC
25.222	TFCI coding (based on j52)	LGIC
25.212	Compressed mode by higher layer scheduling (based on j50)	Ericsson
25.211	Compressed mode by higher layer scheduling (based on j48)	Ericsson

Table 3: Outgoing CRs

## 2. Results of the Discussion

### 2.1 TFCI transmission

In 99j94 LGIC presented a proposal to avoid TFCI puncturing for compressed mode in UL to increase the reliability of TFCI transmission. This idea was also included in a contribution from Siemens (99j30). Additionally here, for UL the bits located directly after the gap, which suffer most from the interruption of the fast power control loop, should be repeated in reverse order. For the same reason, in DL the DTX period should be put directly after the gap and if there is not enough space, the additional DTX should be distributed equally before the transmission gap.

Both proposal were accepted by the ad hoc with the restriction that the DTX periods in DL should always be kept together. It was decided that a common CR should be drafted on this issues by LGIC, Siemens, Ericsson and ETRI.

Tdoc 99j52 presented two variants of an improved TFCI mapping rule, with shows advantages for FDD if the number of TFCI bits is between 2 and 5 bits. This proposal was accepted, however during the discussion there were some concerns with respect to the second alternative. Therefore, it was concluded to recommend the first alternative for approval, which exhibits a slightly superior performance. Although there is no advantage of the new method for TDD, it was decided for harmonisation reasons to use the same TFCI mapping rule for both modes. Therefore, two CR for TS25.212 and TS25.222, respectively, will be drafted.

## 2.2 Rate matching

In the contributions 99i48 and 99i50 Ericsson presented two CRs regarding higher layer scheduling to achieve compressed mode. This option was already agreed during the last WG1 meeting. With respect to a former contribution (g77) there were some additional changes which were discussed during the ad hoc. Both CRs were accepted for approval, but the related TFCI part still has to be adapted to the new notation.

In the tdocs 99j03 and 99j04 presented by Nokia it is proposed to incorporate method A for achieving compressed mode into TS 25.212. It was argued that in case of code shortage in DL an alternative method is necessary since the use of a second scrambling code as preferred by Ericsson would not be reliable enough and higher layer scheduling could not be applied to RT services. During the discussion Mithsubishi mentioned that with the new method in case of TrCH with different TTI no optimum balancing can be achieved. However, as pointed out by Siemens this is not a serious problem since it can be guaranteed that never any TrCH is above its target BER. Nortel supported the proposal from Nokia since it offers additional flexibility for creating the transmission gap. This is especially required due to the fact that any of the proposed methods has certain restrictions and cannot be applied as a general rule. There were some other concerns regarding the additional complexity of the new method, which requires quite a lot of changes in the specification. Finally, it was not possible to reach consensus on this proposal within adhoc 4. Therefore it was recommended to treat this topic again in the plenary.

In 99j08 Siemens presented a method to apply 'end puncturing' in case of convolutional coding, to achieve an almost equal coding gain for all bits. This proposal, which had already been presented during the last meeting, was now refined and the respective CR was elaborated. However, it was not possible to agree on this new method since there were some concerns from Qualcomm and Ericsson regarding the achievable gain which would not justify the additional complexity.

## 2.3 AMR issues

DoCoMo presented a change request (99k11) to modify the description of BTFD in the annex of TS 25.212, taking into account the decisions from the joint R1/S4 meeting in Paris. This CR was accepted and recommended for approval in the plenary.

In the contribution 99k36, Nortel pointed out a benefit of 0.5 dB, if for FDD a code rate 1/3 with puncturing instead of 1/2 is used. These results are quite similar to those presented for TDD in Paris and might give additional evidence for allowing more than one TrCH for each class. However, during the discussion it turns out, that for FDD both in UL and DL always code rate 1/3 can be used, while for TDD AMR yields better performance if dependent on the mode, for class A and B rate 1/2 and 1/3 is available. As a conclusion it was decided to draft a LS to WG2 to point out this situation as a response to 99i22.

Finally, Nortel presented a Tdoc on characterisation test plan and error patterns for FDD, which had already been presented during the joint meeting in Paris.

TSG-S4 had asked TSG-R1, TSG-R2 and TSG-R3 for some guidance regarding the support of the speech service over the Radio Access Network in order to complete the AMR Speech Codec specifications in time for the approval of the 3GPP Release 99. This paper presented more details on the error pattern generation, highlighting which parameters to configure for all allowed mappings. Also the issue of the definition of a set of operational conditions defined in terms of environments, speed and SIR patterns was addressed. Since it was not possible to go into further details during the ad hoc meeting it was agreed that a drafting group should elaborate a LS which contains specific requirements from WG1 regarding AMR test issues. Several companies indicated their interest to participate in this drafting session.

## 2.4 Other multiplexing related items

Panasonic presented a draft LS (99k20) which addresses the possibility to apply different encoding schemes to the FACH, especially for higher data rates. Although during the discussion this idea was supported, it was not possible to come to a final conclusion. Therefore, it is recommended to treat this issue again in the plenary.